- **Do not collect plants from the wild**
- **Buy nursery-propageted plant material**
- **Help prevent establishment of non-native species in natural communities**

FOR MORE INFORMATION ON NATIVE PLANTS:

Virginia Department of Conservation and Recreation
Natural Heritage Program
217 Governor Street
Richmond, VA 23219
(804) 786-7951
www.dcr.state.va.us/dnh/

For a list of nurseries that propagate native plants:
Virginia Native Plant Society
400 Blandy Farm Lane, Unit 2
Boyce, VA 22620
(540) 568-8679
vnpsofc@shentel.net
www.vnps.org

For more information on Riparian Forest Buffers

Department of Forestry
Fontaine Research Park
900 Natural Resources Drive
P.O. Box 3758
Charlottesville, VA 22903-0758
Phone: (804) 977-6555
www.dof.state.va.us

Virginia Coastal Program
Department of Environmental Quality
629 East Main Street
Richmond, VA 23219
Phone: (804) 698-4323
www.deq.state.va.us/coastal.html

Chesapeake Bay Program
410 Severn Avenue, Suite 109
Annapolis, MD 21403
Tel: (800) YOUR-BAY
www.chesapeakebay/bayprogram/index.htm

Virginia Native Plant Society
Conserving Wildflowers and Wild Places
Education-Research-Advocacy-Protection-Rescue-Propagation

Chesapeake Bay Program
A Watershed Partnership

NOAA
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

12/01

Native Plants for Conservation, Restoration and Landscaping

Celebrate and Preserve Our Natural Heritage

Riparian Forest Buffers

OUR NATURAL HERITAGE

Native wildflowers, shrubs and trees are natural treasures handed down to us from a time before recorded history. Yet natural habitats for some of our native plants are rapidly being lost, and along with them the ecological benefits they provide. Using native plants to restore and landscape, whether in residential developments, agricultural lands or public parks, helps preserve native species and their ecological relationships. Riparian forest restoration with native plant species promotes cleaner waterways, provides important food and habitat for many fish and animals, and improves biodiversity.

Native: species naturally occurring in the region in which they evolved (indigenous)

Alien: species introduced to a new region by humans, either deliberately or accidentally (exotic, non-native)

WHAT ARE NATIVES?

Native species are those that occur in the region in which they have evolved. Plants and animals evolve in specific habitats over extended periods of time in response to physical and biological processes that are characteristic of that place: climate, soils and interactions with other species occupying those habitats. They thus possess certain traits that make them uniquely adapted to local conditions.

In North America, plants are considered native if they occurred here before European settlement. This distinction is made because of the many changes in the flora that have occurred since the arrival of Europeans settlers. Since then many plants have been deliberately and accidentally introduced to North America from distant shores.

However, alien species do not come only from distant countries. They may be introduced from a different region of the same country. For instance, a species native to the forests of the west coast of North America would be considered alien if found on the east coast where it was not a constituent of the regional flora.

NATIVES VERSUS ALIENS

While many alien plants are beneficial and do not affect the natural environment, a few invasive alien species pose serious threats to both natural communities and rare species. Because of a lack of natural controls like insect pests and competitors, some alien plants can escape cultivation, establish in a new area, then displace native plant species. What was a finely woven and diverse natural community may become a monoculture dominated by the invasive alien plant. Along with the displacement of native plant species from these natural habitats comes the loss of many flying, crawling and burrowing creatures that relied on native plants for food, cover and shelter.

Plants and animals evolve together to create unique natural communities, weaving a complex web of interrelationships. Flowers often bloom and fruits ripen in synchrony with the needs of the animals that pollinate the flowers and disperse the seeds. A butterfly feeds on the nectar of a certain flower and in turn pollinates the plant. To reap the greatest benefit, the flower must bloom and the butterfly emerge simultaneously. Later the flower goes to seed, coincidentally

Scientific Name	Common Name	Uses				Region			Light			Zone			
		W	H	C	D	M	P	C	S	P	F	1	2	3	4
Ostrya virginiana	Eastern hop-hornbeam		•			•	•	•	•	•					•
Persea borbonia	redbay, sweet bay		•	•				•	•	•				•	
Rhus glabra	smooth sumac	•	•	•		•	•	•			•			•	•
Salix nigra	black willow			•		•	•	•		•	•	•	•	•	
Medium to Large Trees															
Acer rubrum	red maple		•	•		•	•	•			•	•	•	•	•
Betula lenta	sweet birch	•	•	•		•	•			•	•			•	•
Betula nigra	river birch	•	•	•		•	•	•			•		•	•	
Diospyros virginiana	persimmon	•	•	•		•	•	•	•	•	•		•	•	•
Fraxinus americana	white ash	•	•			•	•	•		•	•		•	•	•
Fraxinus pensylvanica	green ash	•	•	•		•	•	•		•	•		•	•	
Juglans nigra	black walnut	•		•		•	•	•		•	•		•	•	•
Liquidambar styraciflua	sweetgum		•	•		•	•	•	•	•	•		•	•	•
Liriodendron tulipifera	tulip-tree, tulip poplar	•	•	•		•	•	•			•			•	•
Nyssa aquatica	water tupelo	•	•	•				•		•	•	•			
Nyssa sylvatica	black gum	•	•	•		•	•	•		•	•		•	•	•
Oxydendrum arboreum	sourwood		•			•	•	•		•				•	•
Pinus taeda	loblolly pine	•	•	•			•	•			•		•	•	•
Platanus occidentalis	sycamore			•		•	•	•		•	•		•	•	•
Quercus bicolor	swamp white oak	•		•		•	•	•	•	•			•	•	
Quercus laurifolia	swamp laurel oak	•		•			•			•	•		•	•	
Quercus michauxii	swamp chestnut oak	•	•				•	•		•	•		•	•	•
Quercus nigra	water oak	•		•				•	•	•			•	•	•
Quercus palustris	pin oak	•	•	•		•	•	•	•	•			•	•	
Quercus phellos	willow oak	•	•	•			•	•		•	•		•	•	•
Taxodium distichum	bald cypress		•	•				•			•	•			

• May be aggressive in garden setting.

* Due to the rarity and sensitivity of habitat in Virginia, these species are recommended for horticultural use only.

† Planting these species in natural areas could be detrimental to the survival of native populations.

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Scientific Name	Common Name	Uses				Region			Light			Zone			
		W	H	C	E	M	P	C	S	P	F	1	2	3	4
Ferns and fern allies															
Athyrium asplenioides	Southern ladyfern		•	•		•	•	•	•					•	•
Botrychium virginianum	Rattlesnake fern		•			•	•	•	•	•					•
Onoclea sensibilis	sensitive fern		•	•		•	•	•		•	•			•	•
Osmunda cinnamomea	cinnamon fern		•	•		•	•	•	•	•			•	•	
Osmunda regalis	royal fern		•	•		•	•	•		•				•	•
Polystichum acrostichoides	Christmas fern		•	•		•	•	•	•						•
Thelypteris palustris	marsh fern		•			•	•	•		•	•	•	•	•	
Woodwardia virginica	Virginia chain fern		•	•				•	•	•	•	•	•		
Grasses, sedges, rushes															
Agrostis perennans	autumn bentgrass			•		•	•	•	•	•	•	•	•	•	•
Andropogon gerardii	big bluestem	•	•	•	•	•	•			•	•		•	•	
Andropogon glomeratus	bushy bluestem		•	•		•	•	•		•	•			•	
Arundinaria gigantea	wild cane, river cane	•		•		•			•	•	•		•	•	•
Carex crinita var. gynandra	long hair sedge	•	•	•		•	•	•		•	•	•	•	•	
Carex lurida	sallow sedge	•		•		•	•	•		•	•	•	•	•	
Carex stricta	tussock sedge	•		•		•	•	•		•	•	•	•	•	
Chasmanthium latifolium	river oats, spanglegrass		•	•		•	•	•	•	•	•		•	•	•
Dichanthelium clandestinum	deer-tongue	•		•	•	•	•	•		•	•	•	•	•	•
Dichanthelium commutatum	variable panicgrass	•	•	•	•	•	•	•	•	•					•
Dulichium arundinaceum	dwarf bamboo	•		•	•	•	•	•		•	•	•	•	•	
Elymus hystrix (Hystrix patula)	bottlebrush grass	•	•			•	•	•	•	•	•				•
Elymus virginicus	Virginia wild rye	•		•		•	•	•	•	•			•	•	•
Juncus canadensis	Canada rush	•		•			•	•		•	•	•	•	•	
Juncus effusus	soft rush	•		•		•	•	•		•	•	•	•	•	
Leersia oryzoides	rice cutgrass	•		•		•	•	•		•	•	•	•	•	
Panicum virgatum	switch grass	•	•	•		•	•	•		•	•	•	•	•	
Saccharum giganteum	giant plumegrass	•	•	•			•	•		•	•	•	•	•	
Scirpus cyperinus	woolgrass bulrush	•	•	•		•	•	•		•	•	•	•	•	
Sparganium americanum	American bur-reed	•		•		•	•	•		•	•	•			
Tripsacum dactyloides	gama grass	•	•	•	•	•	•	•		•	•	•	•	•	•
Typha latifolia	broad-leaved cattail	•		•		•	•	•			•	•			
Zizania aquatica	wild rice	•	•	•				•			•	•			
Vines															
Bignonia capreolata	crossvine	•	•			•	•	•	•	•			•	•	•
Celastrus scandens	climbing bittersweet	•	•			•	•	•	•	•	•				•
Clematis virginiana	virgin's bower		•			•	•	•		•	•	•	•	•	•
Parthenocissus quinquefolia	Virginia creeper	•	•	•		•	•	•		•	•		•	•	•
Shrubs															
Alnus serrulata	common alder	•	•	•		•	•	•	•	•	•	•	•	•	
Aronia arbutifolia	red chokeberry		•	•		•	•	•	•	•			•	•	•
Aronia melanocarpa	black chokeberry		•	•		•	•	•		•	•		•	•	•
Callicarpa americana	American beautyberry	•	•					•	•	•				•	•
Cephalanthus occidentalis	buttonbush		•	•		•	•	•		•	•	•	•		
Clethra alnifolia	sweet pepper bush	•	•	•				•	•	•				•	
Cornus amomum	silky dogwood	•		•		•	•	•	•	•			•	•	
Hydrangea arborescens	wild hydrangea		•			•	•	•	•	•					•
Ilex decidua	possumhaw	•	•	•			•	•	•	•			•	•	•
Ilex verticillata	winterberry	•	•	•		•	•	•		•	•		•	•	•
Itea virginica	Virginia willow	•	•	•				•	•	•			•	•	
Leucothoe racemosa	fetterbush, sweetbells		•	•		•	•	•		•	•		•	•	
Lindera benzoin	spicebush	•	•	•		•	•	•	•					•	•
Myrica cerifera	Southern wax myrtle	•	•	•				•	•	•		•	•	•	•
Rhododendron viscosum	swamp azalea		•	•		•	•	•		•	•		•	•	
Rubus allegheniensis	Allegheny blackberry	•	•	•		•	•				•		•	•	•
Salix sericea	silky willow		•	•		•	•	•		•	•		•	•	
Sambucus canadensis	common elderberry	•	•	•		•	•	•			•		•	•	•
Spiraea alba	narrow-leaf meadowsweet	•	•	•		•					•		•	•	
Spiraea latifolia	broadleaf meadowsweet	•	•	•		•					•		•	•	•
Vaccinium corymbosum	highbush blueberry	•	•	•		•	•	•	•	•	•		•	•	•
Viburnum dentatum	Southern arrow-wood viburnum	•	•	•		•	•	•		•	•				
Viburnum prunifolium	black haw viburnum	•	•	•		•	•	•		•	•				
Small trees															
Amelanchier arborea	downy serviceberry	•	•	•		•	•	•		•	•				•
Amelanchier canadensis	Canada serviceberry	•	•	•		•	•	•			•		•	•	•
Amelanchier laevis	smooth serviceberry	•	•	•		•				•	•				•
Asimina triloba	paw paw	•	•	•		•	•	•	•	•				•	•
Cornus alternifolia	alternate-leaf dogwood	•	•	•		•	•		•	•					•
Crataegus flava	October haw	•	•			•	•	•		•	•			•	
Morus rubra	red mulberry	•	•	•		•	•	•	•	•				•	•

when songbirds are fattening for the autumn migration. Gorging themselves, the birds scatter much of what they fail to eat, thus helping disperse the plant's seed.

Alien plant species rarely keep time according to the internal clocks of our native wildlife. Their flowers may bloom too early or late, their fruits grow too large for resident birds to carry, their petals too long for a local nectar feeder to probe, and their smell and texture unrecognizable to a butterfly in search of a host plant on which to lay her eggs.

RIPARIAN FOREST BUFFERS

Riparian forest buffers are areas of trees, shrubs and other vegetation found next to stream channels and other waterways. They are modeled on natural communities such as bottomland hardwood forest, coastal scrub and upland oak-hickory-pine forests. Conversion of these riparian forests to other land uses has contributed to ecological problems in our waterways and the Chesapeake Bay including sedimentation, nutrient and toxic chemical pollution, and reduction of fish habitat.

Riparian wetlands are characterized by plant species adapted to periodic flooding and/or saturated soils. They support a high diversity of plant and animal species. More energy and materials, born by moving water, enter, are deposited in and pass through riparian ecosystems than any other wetland ecosystem. Drier upland forests adjacent to waterways also provide many of the same ecosystem values.

Riparian forest buffers help control the rate and volume of water flowing in streams and rivers, greatly influencing flood levels. Water flowing through a riparian forest is slowed by the vegetation, leaf litter and porous soils found there.

The leaf litter acts as a filtration system by capturing sediment from upland runoff. This action also helps filter out phosphorus bonded to sediment particles. Sediments, and any nutrient that may be bonded to them, become part of the forest soil rather than clouding our waterways.

Chemical and biological processes of the forest remove nutrients, such as phosphorus and nitrogen, and store them in the soil or as plant tissue. Pesticides are also converted

to nontoxic compounds by various chemical and microbial activities within the forest. This helps protect fish, which are most threatened by pesticide pollution.

Riparian forest soils act as areas of water storage. Plants take up water into their tissues and release it into the atmosphere.

A canopy created by riparian forest provides shade and controls water temperature, which is essential for instream organisms including trout and the invertebrate food source on which they depend. Instream, the leaf litter and woody debris from the canopy and forest create food and habitat vital to the aquatic food web.

Riparian forests provide food and habitat for a variety of terrestrial wildlife and serve as safe corridors for movement between habitats. Habitat conversion and fragmentation have reduced wildlife habitat and limited the ability of animals to move between existing habitats. Riparian forests provide for both these needs.

Riparian forest buffers offer recreation to fishermen, birders, hikers, canoeists and picnickers. The diversity of habitats and life and the scenic beauty provided by riparian forests can be enjoyed by many people in so many different ways.

These ecological functions combine to make riparian forest buffers critical investments in human and ecological health and well-being today and for our children tomorrow. Recognizing these values, the Chesapeake Bay Program has set a goal of replanting 2,010 miles of bay shoreline by the year 2010. Virginia's share of this goal is 610 miles.

RIPARIAN VEGETATION ZONES

Four riparian vegetation zones are identified in this brochure. **Zone 1**, the emergent vegetation zone, is permanently to semi-permanently flooded and often dominated by grasses, sedges, rushes and herbaceous plants. **Zone 2**, the riverside thicket, may be seasonally to temporarily flooded and is often characterized by emergent species, shrubs and a few tree species. **Zone 3**, the saturated forest, has soils that are saturated to poorly drained. **Zone 4**, the well-drained forest, is also known as upland forest. Zones 3 and 4 are dominated by trees, but also contain shrub and herb layers in the understory.

BASICS ABOUT USE OF NATIVE PLANT SPECIES

Riparian restoration efforts will be most successful using native plant species that occur naturally in riparian habitats. When selecting plants for your site, specific characteristics such as bank slope, hydrological regime, soil condition and light must be taken into account. Consider your site carefully. Start with this brochure by studying the names of the plants found in riparian forests and wetlands native to your region. Learn their sunlight and moisture requirements. Refer to field guides and natural history books to learn which plants will fit within your planting scheme and provide specific benefits to the wildlife in your area. Visit a natural riparian forest in your area and notice common plant associations, spatial groupings and habitat conditions. Always purchase your native plants and seeds from a reputable sources that propagate their own plants, preferably from local sources. Seek further information on establishing riparian forest buffers from your local resource management specialists.

Recommended Uses
W = wildlife
H = horticulture
C = conservation
D = domestic livestock forage

Minimum Light Requirments
S = shade
P = partial sun
F = full sun

Native Regions
C = Coastal Plain
P = Piedmont
M = Mountains and Valley

Riparian Vegatation Zones
1 = emergent
2 = riverside thicket
3 = saturated forest
4 = well-drained Forest

Scientific Name	Common Name	Uses				Region			Light			Zone			
		W	H	C	D	W	P	C	S	P	F	1	2	3	4
Forbs															
Acorus americanus (A. calamus)	sweet flag		•	•		•	•	•		•	•	•			
Amsonia tabernaemontana	blue star		•				•	•	•	•				•	•
Arisaema triphyllum	Jack-in-the-pulpit		•			•	•	•	•					•	•
Asarum canadense+	wild ginger		•	•		•	•	•	•						•
Asclepias incarnata	swamp milkweed	•	•	•		•	•	•		•	•	•	•		
Aster novae-angliae	New England aster		•	•		•				•	•			•	
Aster novi-belgii	New York aster	•	•	•				•		•	•	•	•		
Aster umbellatus	flat-top white aster		•	•		•	•			•	•			•	
Bidens comua+	nodding beggar-ticks	•	•	•		•	•	•		•	•	•	•		
Boltonia asteroides	aster-like boltonia		•					•			•	•	•	•	
Caltha palustris	marsh marigold		•	•		•		•		•	•			•	
Chamaecrista fasciculata+	partridge pea			•		•	•	•			•				•
Chelone glabra	white turtlehead		•	•		•	•	•	•	•			•	•	
Chrysogonum virginianum	green and gold		•	•		•	•	•	•						•
Coreopsis tripteris	tall coreopsis		•	•		•	•	•		•	•		•	•	•
Delphinium tricorne	dwarf larkspur		•			•	•		•	•					•
Dicentra cucullaria	Dutchman's breeches		•			•	•		•						•
Equisetum hyemale	horsetail, scouring rush			•		•	•	•	•	•	•		•	•	•
Eupatorium coelestinum	mistflower	•	•	•		•	•	•	•	•	•			•	•
Eupatorium fistulosum	Joe Pye weed	•	•	•		•	•	•		•	•		•	•	•
Eupatorium perfoliatum	common boneset			•		•	•	•		•	•	•	•	•	
Helenium autumnale	sneezeweed	•	•	•		•	•	•		•	•	•	•	•	
Helianthus decapetalus	ten-petaled sunflower	•	•	•		•	•	•		•	•			•	•
Heliopsis helianthoides	oxeye sunflower	•	•	•		•	•	•		•	•			•	•
Hibiscus moscheutos	Eastern rosemallow	•	•	•		•	•	•			•	•	•		
Iris virginica	Virginia blue flag		•	•			•	•		•	•	•	•		
Kosteletskya virginica	seashore mallow	•		•				•			•	•	•		
Lilium superbum	Turk's cap lily		•			•	•	•		•	•			•	•
Lobelia cardinalis	cardinal flower	•	•	•		•	•	•		•	•	•	•	•	
Lobelia siphilitica	great blue lobelia	•	•	•		•	•	•	•	•				•	•
Maianthemum racemosa	false Solomon's seal		•	•		•	•	•	•	•				•	•
Mertensia virginica	Virginia bluebells		•	•		•	•		•	•				•	•
Mimulus ringens	monkeyflower		•	•		•	•	•			•	•	•	•	
Monarda didyma	bee balm	•	•	•		•			•	•				•	•
Nymphaea odorata	American water lily	•	•	•		•	•	•			•	•			
Oenothera fruticosa	sundrops	•	•	•		•	•	•			•	•	•	•	•
Peltandra virginica	arrow arum	•	•	•			•	•		•	•	•	•		
Phlox divaricata	woodland phlox		•	•		•	•			•				•	•
Phlox paniculata	summer phlox		•	•		•	•	•		•	•			•	•
Podophyllum peltatum+	mayapple	•	•	•		•	•	•		•	•				•
Polemonium reptans	Jacob's ladder		•			•	•	•	•	•					•
Pontederia cordata	pickerel weed	•	•	•			•	•			•	•			
Rhexia virginica	Virginia meadow-beauty	•		•		•	•	•			•			•	
Rudbeckia laciniata	cut-leaved coneflower	•	•	•		•	•	•		•	•		•	•	•
Sagittaria latifolia	broadleaf arrowhead	•	•	•		•	•	•			•	•	•		
Saururus cernuus	lizard's tail		•	•		•	•	•		•	•	•	•		
Senecio aureus+	golden ragwort	•		•		•	•	•	•	•			•	•	•
Solidago rugosa+	rough-stemmed	•		•		•	•	•		•	•		•	•	•
Verbena hastata	blue vervain	•		•		•	•			•	•		•	•	
Vernonia noveboracensis	New York ironweed	•	•	•		•	•	•		•	•		•	•	•
Viola cucullata	marsh blue violet	•	•	•		•	•	•		•	•			•	
Viola pubescens	yellow violet	•	•	•		•	•		•	•					•
Zephyranthes atamasco	Atamasco lily		•	•				•		•	•		•	•	•